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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,305

01/25/2007

Dieter Lehmann

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EXAMINER

BERMAN, SUSAN W

ART UNIT

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1796

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
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Office Action Summary	Application No. 10/577,305	Applicant(s) LEHMANN ET AL.	
	Examiner /Susan W. Berman/	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1-25-07</u> . | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1-7, it is not clear whether the homopolymers, copolymer or terpolymers are radically coupled on the surface of the homopolymer, etc or on the surface of the polytetrafluoroethylene surface. It is not clear what is meant by “radiation-chemically” or “plasma-chemically”. Does applicant intend to recite formation of peroxy, alkoxy and/or perfluoroalkyl radicals by exposure to radiation or plasma, as set forth on page 1, lines 14-15? Does applicant intend to recite that the radical coupling of PTFE and homopolymer, etc. is obtained by radiation or plasma exposure? Does applicant intend to set forth formation of carboxyl and/or sulfonic acid groups as disclosed on page 2? Is the PTFE modified by chemicals present during exposure to radiation or plasma? Is the PTFE modified by radiation or plasma to produce a chemically different polymer?

In claims 8-22, it is not clear what is encompassed by the phrase “reactively converted”. It is not clear what kinds of “substance” are suitable in the phrase “in dispersion or substance”. The kind of “substance”, whether a solvent or monomer or some other kind of material, should be clearly set forth. It is suggested that the phrase “a polymer-forming reaction to homopolymers...obtained” be rewritten to more clearly recite “a reaction to form homopolymers...radically coupled to the polytetrafluoroethylene powder is obtained” or “a

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reaction to obtain homopolymers... radically coupled to polytetrafluoroethylene powder occurs”.

In claim 9, it is not clear how the perfluoroalkyl-(peroxy) radical centers are formed. Are these “centers” the result of radiation-chemical modification or plasma-chemical modification or the result of tempering at low temperatures? In claim 13, the kinds of “reactants” present during the modification should be clearly set forth. Are the reactants the chemicals that modify the PTFE powder? Are the reactants the reactants that form a homopolymers or copolymer?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by D’Agostino et al (6,387,964). D’Agostino et al disclose water-based grafting of monomers to perfluorinated polymers, such as PTFE, comprising activating the polymer by irradiation, quenching the activated polymer to cause crosslinking, activating the crosslinked polymer by irradiation and contacting the activated polymer with an emulsion containing unsaturated monomer to effect grafting. D’Agostino et al teach using a radiation dose of 0.1 to 15 Mrad, preferably in an inert atmosphere, in the activation step (iii) (column 4, lines 54-63). The patent also teaches irradiation in step (i) within a range from 10 to 80 Mrad, also in an inert atmosphere (column 5, lines 26-30, and examples). Thus, with respect to claims 3 and 4, the total irradiation dose taught by D’Agostino et al is greater than 5 or 10 Mrad (50 or 100 kGy).

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Claims 8-10, 13-15, 17, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by FR 2494702. Example 1 discloses irradiation of PTFE in air with a dose of 0.12 Mrad gamma radiation followed by heat treatment. The activated PTFE is then grafted with a mixture of monomers. Claim 13 is taught in page 3, lines 18-21.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Agostino et al (6,387,964) in view of FR 2494702. D'Agostino et al teach irradiating PTFE preferably in an inert atmosphere, thus teaching that irradiation can be carried out in the presence of oxygen. D'Agostino et al do not teach irradiating PTFE in the presence of reactants. FR '702 teaches irradiating PTFE in the presence of reactants and in the presence of oxygen in Example 1.

It would have been obvious to one skilled in the art at the time of the invention to carry out irradiation of PTFE in oxygen and in the presence of monomers, as taught by FR '702, to prepare the grafted PTFE disclosed by D'Agostino et al. D'Agostino et al and FR '702 teach alternative but analogous methods comprising irradiation and grafting of PTFE for preparing analogous grafted PTFE. D'Agostino et al teach that PTFE can be irradiated in oxygen and that

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an activated PTFE can be grafted with monomers in suspension or in the monomer. FR'702 teaches that PTFE can be effectively activated by irradiation in the presence of air and monomers to prepare grafted PTFE. One skilled in the art at the time of the invention would have been motivated by a reasonable expectation of providing a useful grafted PTFE product.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2494702 in view of D'Agostino et al (6,387,964). With respect to claims 11 and 12, FR '702 does not teach radiation doses greater than 5 kGy or greater than 10 kGy. However, D'Agostino et al teach using a radiation dose of 0.1 to 15 Mrad in the activation step (iii) (column 4, lines 54-63). D'Agostino et al also teach irradiation in step (i) within a range from 10 to 80 Mrad (column 5, lines 26-30, and examples). Thus, with respect to claims 11 and 12, D'Agostino et al teach a total irradiation dose greater than 5 or 10 Mrad (50 or 100 kGy, as set forth in the instant claims).

It would have been obvious to one skilled in the art at the time of the invention to employ the higher irradiation doses taught by D'Agostino et al in the analogous method disclosed by FR '702. FR '702 provides motivation by teaching a method of activating and grafting PTFE by exposure to irradiation. D'Agostino et al provide motivation by teaching that a higher dose of irradiation is effective in an analogous method for activating and grafting PTFE. One skilled in the art at the time of the invention would have been motivated by a reasonable expectation of obtaining a useful grafted PTFE.

Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2494702.

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With respect to claim 16, FR '702 does not mention using an autoclave, a stirred tank or an extruder/kneader. However, It would have been obvious to one skilled in the art at the time of the invention to perform the method taught by FR '702 alone or in combination with D'Agostino et al in an autoclave, a stirred tank or an extruder/kneader. The reason in that each of the apparatus recited in instant claim 16 and their functions or modes of operation are well known. One skilled in the art at the time of the invention would have immediately envisioned using one of these apparatus to provide effective mixing and/or temperature control during the reaction taught by FR '702 alone or in combination with D'Agostino et al.

With respect to claim 19, FR '702 does not mention grafting with olefinically unsaturated macromers or oligomers. However, It would have been obvious to one skilled in the art at the time of the invention to include olefinically unsaturated macromers or oligomers in the olefinically unsaturated monomers to be grafted to the PTFE in the method taught by FR '702. One skilled in the art at the time of the invention would have immediately envisaged that olefinically unsaturated macromers or oligomers could be grafted to PTFE in an analogous manner as the olefinically unsaturated monomers specifically taught by FR '702.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

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Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of copending Application No. 10/577,300. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instantly claimed polytetrafluoroethylene is a species of the perfluoropolymer set forth in the claims of 10/577300 which include claim 5 reciting PTFE. It would have been obvious to one skilled in the art at the time of the invention to employ PTFE as the perfluoropolymer in the claimed product or method of 10/577,300.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/577,619. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims recite a radically coupled PTFE that includes PTFE radically coupled with polymers that encompass the species of radically coupled PTFE polymers coupled with olefinically unsaturated polymers set forth in the claims of '619.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references cited in the search report are considered to be cumulative of D'Agostino et al, at least with respect to claims 1, 2, 5 and 7. Molinski et al (4,385,130) disclose grafting monomers such as styrene and maleic anhydride to polytetrafluoroethylene powder by irradiation of the materials in a suspension. See Examples 6-8 and 13-18. Magat et al (3,298,942) disclose irradiating PTFE under vacuum in the presence of styrene (Examples 18-29). GB 1516648 discloses irradiation of PTFE powder to activate followed by reaction with a fluorinated monomer in suspension or in the monomer.

Derbyshire (4,220,511) discloses irradiation of PTFE in oxygen or in air in a range of 45 Mrads to 200 Mrads, with concurrent or subsequent heating, to produce PTFE powder having an average size less than 10 microns. Derbyshire teaches that irradiation produces oxidized or peroxidized PTFE (column 15, line 66, to column 16, line 10). Derbyshire does not mention grafting but teaches that the powders produced can be used in various fabrication processes (column 1, lines 13-16).

Tabata et al (5,444,103) disclose production of modified polytetrafluoroethylene by exposing the PTFE to ionizing radiation of at least 100 kGy in the absence of oxygen. Ishigaki et al (5,075,342) teach grafting monomers onto PTFE after irradiating the PTFE in an inert atmosphere. See Examples 6 and 9. Kawashima et al (4,652,592) disclose graft copolymerization

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of monomers to a fluorine-containing polymer produced from an unsaturated peroxy compound. Chapiro et al (3,666,693) discloses sequential graft copolymerization of acid and basic monomers onto a halogenated olefin such as PTFE. Example 1 discloses irradiation of PTFE in an aqueous solution of acrylic acid under vacuum, washing and drying the film and then irradiating the film in an aqueous solution of vinyl pyridine in vacuum.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /Susan W. Berman/ whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SB
1/17/2009

/Susan W Berman/
Primary Examiner
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